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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,761	09/11/2003	Alan John Kingsman	674523-2005.2	9467

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EXAMINER	
SCHNIZER, RICHARD A	

ART UNIT	PAPER NUMBER
1635	

DATE MAILED: 07/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/661,761	KINGSMAN ET AL.	
	Examiner	Art Unit	
	Richard Schnizer, Ph. D	1635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 3/11/03 is/are: a)☑ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/11/03;12/22/04;*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: *IDS of 1/10/05*.

DETAILED ACTION

A preliminary amendment was received and entered on 9/11/03. Claims 1-19 were canceled and claims 20-62 were added as requested.

A petition to make special was received and entered on 6/6/05. The petition was granted.

Claims 20-62 are pending and under consideration in this Office Action.

Priority

This application is a continuation-in-part of allowed U.S. application Serial No. 09/915,169, filed on July 25, 2001, now US Patent 6,669,936. The priority claim in the specification should be amended to reflect the issuance of 6,669,936.

Information Disclosure Statements

Information Disclosure Statements were received on 3/11/03, 12/22/04 and 1/10/05. Reference AG on the 3/11/03 IDS (WO 91/197998) was not considered because there is no such document. This appears to be a typographical error for WO 91/19798, which is listed as AD on the 12/22/04 IDS, and was considered.

Claim Objections

Claim 49 is objected to because it lacks an article preceding "tat".

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 46-51 and 61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 46 and dependents 47-51 and 61 are indefinite because the relationship to the invention of "a functionally active rev" is unclear. The claims are drawn to methods of producing a retroviral particle. The only active step is coexpressing in a retroviral producer cell one or more nucleic acid sequences encoding a genome and several proteins, and "optionally comprising a functionally active rev". It is unclear to what "optionally comprising a functionally active rev" pertains. It is not a method step, and the claim does not call for expressing rev, so the claims are indefinite. If Applicant intends that the claim should require expression of a functionally active rev, then an amendment to that effect, if it is supported by the specification, is suggested.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 20-40, 42-44, 46-50, 52, and 60-62 are rejected under 35 U.S.C. 102(b) as being anticipated by Harmache et al (J. Virol. 69(9): 5445-5454, 1995), as evidenced by Douvas et al (US Patent 6033672).

Harmache taught infectious caprine arthritis encephalitis virus (CAEV) particles lacking both a functional tat gene and a functional Tat protein. No difference was observed between replication of wild type and either tat deletion or nonsense mutants. Tat mutant CAEV was isolated from blood-derived macrophages in a tissue culture supernatant carrier, and used to infect synovial membrane cells in vitro. See abstract and paragraph bridging pages 5451 and 5452.

With regard to rejected claims requiring a gene encoding a therapeutic gene of interest, note that Douvas taught that the CAEV gag, pol, and env proteins contained epitopes that could immunize a goat against infection (see abstract, and Table 1). It follows that CAEV gag, pol, and env can be considered therapeutic proteins.

Regarding claims 32, 42, 46, and dependents which require three DNA constructs of sequences encoding (i) the genome of the vector, (ii) gag and pol, and (iii) env, Harmache taught a DNA vector comprising the vector genome and gag, pol, and env genes (see e.g. paragraph bridging columns 5450 and 5451). Each portion of the vector corresponding to items (i-iii) above can be considered to be a "construct".

Thus Harmache anticipates the claims.

Claims 20-22, 24, 25, 27-30, 33-36, 40, 42-44, 46-50, 52-54, and 56-60 are rejected under 35 U.S.C. 102(b) as being anticipated by Bray et al (Proc. Nat. Acad. Sci. USA 91: 1256-1260, 1994), as evidenced by anyone of Coffin et al (in Retroviruses Cold Spring Harbor Laboratory Press, 1997, page 58), Carrano et al (US Patent 5739118), Zagury et al (US Patent 6200575) or Cohen et al (US Patent 6468539).

Bray taught an infectious modified HIV-I particle lacking Rev, but including a 219 base Mason Pfizer constitutive transport element (CTE). Tissue supernatants comprising infectious particles were isolated from cultures of cells transfected with plasmids encoding a retroviral genome, gag/pol, and env/Mason Pfizer CTE (pRev(-)MPMV). The particles were used to infect human CD4+ cells, and replication of viruses was detected. See page 1259, column 2, second full paragraph through column 2, second full paragraph.

With regard to the presence or absence of Tat protein in the particle, evidence in the art indicates that Tat protein is not naturally present in retroviral particles. For example, Coffin taught that the only retroviral accessory gene products present in substantial amounts in particles were Vpx and Vpr, and possibly Vif and Nef, although the amounts detected of these two proteins were consistent with contamination from cellular debris. See page 58, column 1, first full paragraph. Carrano et al taught that "Only vpr has been found to be associated with viral particles, whereas other regulatory proteins, including tat, rev, nef, vif and vpu, are not virion associated." Zagury taught that "[t]he Tat molecule is an HIV regulatory protein which is not found in the viral

particle but is coded by the HIV-1 genome." And, Cohen taught that "Vpr and Vpx are the first regulatory protein of any retrovirus found to be associated with viral particles. Other regulatory proteins, such as tat, Rev, Nef, Vif and Vpu are not virion-associated."

Regarding claim 49, which requires that gag and pol are expressed independently of tat, it is noted that tat occupies an independent position from both gag and pol, and is read in a different reading frame from both gag and pol. For these reasons expression of gag and pol is considered to be independent of the tat gene.

Claims 20-51 and 53-55 are rejected under 35 U.S.C. 102(e) as being anticipated by Verma et al (US Patent 6013516) as evidenced by any one of Coffin et al (in Retroviruses Cold Spring Harbor Laboratory Press, 1997, page 58), Carrano et al (US Patent 5739118), Zagury et al (US Patent 6200575) or Cohen et al (US Patent 6468539).

Verma taught an infectious lentiviral particle with a genome comprising therapeutic gene, a non-retroviral promoter, and an RRE, wherein the particle comprises gag, pol, and env. See e.g. column 2, lines 11-42; Fig, 1 "Transfer vector" which shows a vector comprising an RRE and a cytomegalovirus promoter; column 5, lines 39-45; paragraph bridging columns 7 and 8, and column 9, lines 42-48 for disclosure of therapeutic genes. Verma also taught that the virus could be pseudotyped by substitution of vesicular stomatitis virus G protein for HIV env (see column 10, lines 1-16). Verma also taught a set of vectors for producing the lentiviral particle including one vector encoding gag and pol, a separate vector encoding env, and a third vector

comprising RRE sequences, LTRs, and a heterologous promoter and gene. See claim 1 and Fig. 1.

With regard to the presence or absence of Tat protein in the particle, evidence in the art indicates that Tat protein is not naturally present in retroviral particles. For example, Coffin taught that the only retroviral accessory gene products present in substantial amounts in particles were Vpx and Vpr, and possibly Vif and Nef, although the amounts detected of these two proteins were consistent with contamination from cellular debris. See page 58, column 1, first full paragraph. Carrano et al taught that "Only vpr has been found to be associated with viral particles, whereas other regulatory proteins, including tat, rev, nef, vif and vpu, are not virion associated." Zagury taught that "[t]he Tat molecule is an HIV regulatory protein which is not found in the viral particle but is coded by the HIV-1 genome." And, Cohen taught that "Vpr and Vpx are the first regulatory protein of any retrovirus found to be associated with viral particles. Other regulatory proteins, such as tat, Rev, Nef, Vif and Vpu are not virion-associated."

Claims 20-22, 25-30, 32-36, 38-54, and 60-62 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang et al (Virology 211: 157-169, 1995).

Chang taught infectious HIV-1 lentiviral particles lacking functional tat genes and polypeptides. See abstract. Chang taught that tat protein was not required for HIV-1 replication. See page 158, column 1, last two sentences of first full paragraph; Figure 2 on page 160; paragraph bridging columns 1 and 2 on page 161, especially sentence bridging columns 1 and 2; page 162; first sentence of paragraph bridging columns 1 and

2; page 164; sentence bridging columns 1 and 2; sentence bridging pages 164 and 165; and last sentence of paragraph bridging pages 165 and 166

Regarding claims 32, 42, 46, and dependents which require three DNA constructs of sequences encoding (i) the genome of the vector, (ii) gag and pol, and (iii) env, Chang taught a DNA vector comprising the vector genome and gag, pol, and env genes (see e.g. Fig. 2 on page 160). Each portion of the vector corresponding to items (i-iii) above can be considered to be a "construct", wherein the genome construct comprises constructs 'ii' and 'iii'.

Regarding claim 49, which requires that gag and pol are expressed independently of tat, it is noted that occupies and independent position from either of gag or pol, and is read in a different reading frame from either gag or pol. For these reasons expression of gag and pol is considered to be independent of the tat gene.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

In the event that Applicant is able to provide evidence showing that Tat protein is present in the lentiviral particles of Bray et al and Verma et al above, the following rejections will still apply.

Claims 20-51 and 53-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Verma (US Patent 6013516) in view of Chang et al (Virology 211: 157-169, 1995).

Verma taught an infectious lentiviral particle comprising a genome comprising a therapeutic gene, a non-retroviral promoter, and an RRE, wherein the particle comprises gag, pol, and env. See e.g. column 2, lines 11-42; Fig, 1 "Transfer vector", which shows a vector comprising an RRE and a cytomegalovirus promoter; column 5, lines 39-45; paragraph bridging columns 7 and 8; and column 9, lines 42-48 for disclosure of therapeutic genes. Verma also taught that the virus could be pseudotyped by substitution of vesicular stomatitis virus G protein for HIV env (see column 10,lines 1-16). Verma also taught a set of vectors for producing the lentiviral particle including one vector encoding gag and pol, a separate vector encoding env, and a third vector comprising RRE sequences, LTRs, and a heterologous promoter and gene. See claim 1 and Fig. 1.

Verma did not explicitly suggest deletion or disruption of tat genes.

Chang taught that HIV Tat was not necessary for retrovirus production, and that it had been implicated in promotion of Kaposi sarcoma and suppression of immune cell activation.

It would have been obvious to one of ordinary skill in the art at the time of the invention to omit the tat gene from the constructs used to make the retroviral particle of Verma. One would have been motivated to do so because Chang taught that virus could be produced without Tat. The resulting production system would be simpler, and

safer in view of Chang's teachings regarding Kaposi's sarcoma. Also, deletion of the upstream tat exon (that does not overlap the env open reading frame) would provide more space for incorporating genes of interest into the limited length of the genome. Thus one would have been motivated to delete Tat.

Claims 56-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammarskjold et al (US Patent 5585263) in view of Chang et al (Virology 211: 157-169, 1995) as applied to claims 20-51 and 53-55 above, and further in view of Bray et al (Proc. Nat. Acad. Sci. USA 91: 1256-1260, 1994).

Hammarskjold discloses the teachings of Bray et al above, i.e. Hammarskjold taught an infectious modified HIV-I particle lacking Rev, but including a 219 base Mason Pfizer constitutive transport element (CTE). Tissue supernatants comprising infectious particles were isolated from cultures of cells transfected with plasmids encoding a retroviral genome, gag/pol, and env/Mason Pfizer CTE (pRev(-)MPMV). The particles were used to infect human CD4+ cells, and replication of viruses was detected. See See Fig. 9; column 17, lines 1-60; and see Bray at page 1259, column 2, second full paragraph through column 2, second full paragraph.

Hammarskjold also taught that much research has been focused on the development of a vaccine against AIDS, particularly a vaccine that can readily elicit significant levels of neutralizing antibodies that would prevent the debilitating effects of HIV infection, but noted that no such vaccine existed. Hammarskjöld stated that a new approach was the development of a simpler retroviral vaccine against HIV, based on the

general observation that mammalian immune systems are much more successful in controlling infection caused by simpler retroviruses, as opposed to infections by more complex retroviruses such as HIV. Thus, the development of a simplified HIV may result in a virus limited in replication such that an infected human may be able to respond by successfully mounting a protective response which would also be effective against wild type HIV. "Simplified" means that this engineered virus would express only the gag, pol, and env proteins. However, an obstacle to the development of such a HIV vaccine is that env production and viral replication is dependent on the presence of rev. This obstacle can be circumvented by using the Mason Pfizer CTE to cause the simplified virus to replicate in a Rev-independent manner. See column 3, lines 25-56 and column 4, lines 9-12.

It would have been obvious to one of ordinary skill in the art at the time of the invention to ensure that the simplified HIV particle of Hammarskjöld lacked a functional Tat protein for several reasons. Chang taught that deletion of HIV tat produced an attenuated virus, and that HIV Tat had been implicated in promotion of Kaposi sarcoma and suppression of immune cell activation. Also, Hammarskjöld taught that the simplified virus should express only gag, pol, and env. One would have been motivated to produce such a vector in the process of studying potential HIV vaccines, in view of the teachings of Hammarskjold. Thus the invention as a whole was prima facie obvious.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 20-62 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-71 of U.S. Patent No. 6,312,682. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons.

The claims of the '682 patent are drawn to for example:

1. An infection and transduction competent, lentivirus-based retroviral vector particle comprising a genome, gag, pol, an envelope protein, and optionally a functionally active rev, wherein the particle lacks all functional lentiviral auxiliary gene products other than the optionally present functionally active rev.

10. A retroviral vector production system for producing the infection and transduction competent, lentivirus-based retroviral vector particle according to claim 3, which system comprises nucleic acid sequence(s) encoding the genome of the retroviral vector particle, gag, pol, and the envelope protein, and optionally the functionally active rev, wherein all lentiviral auxiliary genes, or all lentiviral auxiliary genes except the optionally present rev, are absent or are disrupted, whereby functional auxiliary proteins encoded by said auxiliary genes are not expressed in the system.

30. A set of nucleic acid sequences encoding the components of the infection and transduction competent, lentivirus-based vector particle according to any one of claims 1 or 2, comprising: a first DNA construct which encodes the genome of the vector particle, a second DNA construct which encodes gag and pol proteins, and a third DNA construct which encodes an envelope protein, wherein: one of the DNA constructs optionally encodes a functionally active rev; and all other lentiviral auxiliary gene products are absent from the retroviral vector particle and producer cells in which the sequences are expressed, and

lentiviral auxiliary genes encoding said other lentiviral auxiliary gene products are absent from or disrupted in the set of sequences.

35. A method for producing the infection and transduction competent, lentivirus-based, replication defective vector particle as claimed in claim 1 or 2, comprising coexpressing in a retroviral producer cell nucleic acid sequence(s) encoding the genome of the vector particle, gag and pol proteins, and an envelope protein, and, optionally a functionally active rev; wherein one of the nucleic acid sequence(s) optionally encodes a functionally active rev; and all other lentiviral auxiliary gene products are absent from the retroviral vector particle and producer cells in which the sequence(s) are expressed, and lentiviral auxiliary genes encoding said other lentiviral auxiliary gene products are absent from or disrupted in the sequence(s).

63. An isolated nucleic acid sequence encoding the components of the infection and transduction competent, lentivirus-based, replication defective vector particle as claimed in claim 1 or 2, comprising DNA construct(s) which encode the genome of the vector particle, gag and pol proteins, and an envelope protein, wherein, the nucleic acid sequence produces the lentivirus-based, replication defective vector particle, and, wherein: the DNA construct(s) optionally encode a functionally active rev; and all other functional auxiliary gene products are absent from the retroviral vector particle and producer cells in which the nucleic acid sequence is expressed, and are also absent from or disrupted in the nucleic acid sequence.

71. The retroviral particle of claim 1 or 2 wherein the functionally active rev is present as a constitutive transport element (CTE).

Because tat is an auxiliary gene, and the claims of '682 require the absence of auxiliary genes and proteins with the optional exception of rev, the claims of '682 are drawn to lentiviral particles lacking tat and functional tat genes.

Limitations regarding therapeutic genes and genes of interest are found e.g. in claims 3, 4, 12, 13, 16, 20, 38-40, and 48-50.

Limitations regarding methods of expressing a gene of interest are found e.g. in claims 8 and 9, and are otherwise obvious because that is the intended purpose of the lentiviral particle.

Limitations regarding promoters and nonretroviral promoters are found in claims 33, 34 and 51-56.

Limitations regarding VSV-G envelope protein are found in claim 69.

Limitations regarding CTEs are found in claims 70 and 71. The specification teaches that the CTE may be from Mason Pfizer Monkey virus, see column 4, lines 26-37.

Claims 20-62 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-71 of U.S. Patent No. 6,669,936. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons.

The claims of the '936 patent are drawn to for example:

1. An infection and transduction competent, lentivirus-based retroviral vector particle comprising a genome, gag, pol, an envelope protein, and optionally one or more RRE-type sequences, wherein the particle lacks all functional lentiviral auxiliary gene products.

10. A retroviral vector production system for producing the infection and transduction competent, lentivirus-based retroviral vector particle according to claim 1, which system comprises nucleic acid sequence(s) encoding the genome of the retroviral vector particle, gag, pol, and an envelope protein, and optionally comprising one or more RRE-type sequences, wherein all functional lentiviral auxiliary proteins are absent from the retroviral particle.

25. A set of nucleic acid sequences encoding the components of the infection and transduction competent, lentivirus-based vector particle according to claim 1, comprising: a first DNA construct which encodes the genome of the vector particle, a second DNA construct which encodes gag and pol proteins, and a third DNA construct which encodes an envelope protein, wherein: one of the DNA constructs optionally comprises one or more RRE-type sequences; and all functional lentiviral auxiliary gene products are absent from the retroviral vector particle.

29. A method for producing the infection and transduction competent, lentivirus-based, replication defective vector particle as claimed in claim 1, comprising coexpressing in a retroviral producer cell nucleic acid sequence(s) encoding the genome of the vector particle, gag and pol proteins, and an envelope protein, and, optionally comprising RRE-type sequences; and wherein all functional lentiviral auxiliary gene products are absent from the retroviral vector particle.

55. An isolated nucleic acid sequence encoding the components of the infection and transduction competent, lentivirus-based, replication defective vector particle as claimed in claim 1, comprising DNA construct(s) which encode the genome of the vector particle, gag and pol proteins, and an envelope protein, wherein, the nucleic acid sequence produces the lentivirus-based, replication defective vector particle, and, wherein: the DNA construct(s) optionally comprise one or more RRE-type sequences; and all functional auxiliary gene products are absent from the retroviral vector particle.

61. The retroviral vector production system according to claim 10 or 11 wherein at least one RRE-type sequence comprises a constitutive transport element (CTE).

62. The retroviral particle of claim 1 or 2 wherein at least one RRE-type sequence comprises a constitutive transport element (CTE).

63. The retroviral vector production system according to claim 61 wherein the constitutive transport element (CTE) is a Mason Pfizer monkey virus CTE.

65. A retroviral vector production system for producing the infection and transduction competent, lentivirus-based retroviral vector particle according to claim 10 or 11, wherein all functional lentiviral auxiliary genes are absent, or are disrupted, and not functionally expressed in the system.

66. A set of nucleic acid sequences encoding the components of the infection and transduction competent, lentivirus-based vector particle according to claim 2, comprising: a first DNA construct which encodes the genome of the vector particle, a second DNA construct which encodes gag and pol proteins, and a third DNA construct which encodes an envelope protein, wherein: one of the DNA constructs comprises one or more RRE-type sequences; and all functional lentiviral auxiliary gene products are absent from the retroviral vector particle.

67. A method for producing the infection and transduction competent, lentivirus-based, replication defective vector particle as claimed in claim 2, comprising coexpressing in a retroviral producer cell nucleic acid sequence(s) encoding the genome of the vector particle, gag and pol proteins, and an envelope protein, and comprising RRE-type sequences; and all functional lentiviral auxiliary gene products are absent from the retroviral vector particle.

68. An isolated nucleic acid sequence encoding the components of the infection and transduction competent, lentivirus-based, replication defective vector particle as claimed in claim 2, comprising DNA construct(s) which encode the genome of the vector particle, gag and pol proteins, and an envelope protein, wherein, the nucleic acid sequence produces the lentivirus-based, replication defective vector particle, and, wherein: the DNA construct(s) comprise one or more RRE-type sequences; and all functional auxiliary gene products are absent from the retroviral vector particle.

71. A set of nucleic acid sequences according to claim 25 or 66 wherein all genes encoding lentiviral auxiliary gene products are absent from or disrupted in the set of sequences and not functionally expressed in producer cells.

Because tat is an auxiliary gene, and the claims of '936 require the absence of auxiliary genes and proteins with the optional exception of rev, the claims of '936 are drawn to lentiviral particles lacking tat and functional tat genes.

Limitations regarding therapeutic genes and genes of interest are found e.g. in claims 3, 4, 12, 13, 16, 20, 26, 32-34, and 40-42.

Limitations regarding methods of expressing a gene of interest are found e.g. in claims 8 and 9, and are otherwise obvious because that is the intended purpose of the lentiviral particle.

Limitations regarding promoters and nonretroviral promoters are found in claims 23, 24, and 43-48.

Limitations regarding VSV-G envelope protein are found in claim 60.

Limitations regarding CTEs and Mason Pfizer CTE are found in claims 61-64.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner(s) should be directed to Richard Schnizer, whose telephone number is 571-272-0762. The examiner can normally be reached Monday through Friday between the hours of 6:00 AM and 3:30. The examiner is off on alternate Fridays, but is sometimes in the office anyway.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Andrew Wang, can be reached at (571) 272-0811. The official central fax number is 703-872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

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Richard Schnizer, Ph.D.